M/045/017

Norman H. Bangerter
Governor
Kenneth L. Alkema
Executive Director
Don A. Ostler, P.E.
Director

State of Utah
DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF WATER QUALITY

(801) 538-6146
(801) 538-6016 Fax

Reply to: Department of Environmental Quality
Division of Water Quality
288 North 1460 West
P.O. Box 144870
Salt Lake City, Utah 84114-4870

June 15, 1992

Certified Mail
Return Receipt Requested

Mr. Frank Wicks
Vice President and General Manager
Barrick Mercur Gold Mine
P.O. Box 838
Tooele Utah, 84074

RE: Dump Leach No. 2 Neutralization Workplan and Compliance Schedule: *Notice of Deficiency*, Stipulation and Consent Order, Docket No. GW-90-03-A.

Dear Mr. Wicks:

We have recieved your March 27, 1992 submittal of the Neutralization, Closure, and Post-Closure Monitoring Plan for Dump Leach No. 2. This letter is to bring to your attention certain deficiencies regarding the Neutralization Workplan and Compliance Schedule required by Condition No. 3 of the Stipulation and Consent Order, referenced above. The Closure and Post-Closure Plans are dependent upon design and requirements of the Neutralization Plan. Consequently, we have divided your March 27, 1992 submittal into three parts, one for each plan. Correspondence will follow at a later date regarding any deficiencies in the Closure Workplan and Compliance Schedule and the Post-Closure Monitoring Plan and Compliance Schedule required by Conditions Nos. 4 and 5 of the Order.

Neutralization Workplan and Compliance Schedule - The neutralization plan in your March 27, 1992 submittal was extremely brief, consisting of five very short paragraphs. Due to this brievity, we have listed a large number of deficiencies below. Barrick's inability to propose certain important details in the Neutralization Plan combined with impending deadlines for cessation of active leaching and commencement of neutralization of July 1, 1992 and August 3,

1992, respectively, has forced us to specify certain details that must be included in an approved plan.

By way of clarification, rinsate shall mean those waters or solutions applied to the dump leach in order to remove cyanide or other contaminants. Leachates shall be those waters or solutions that have percolated thru the dump leach and have been removed for treatment.

1. Cyanide Detoxification System and Plans - Barrick will provide a complete description and detailed engineering plans and specifications for the cyanide detoxification system that will be used to reduce and eliminate the cyanide content in Dump Leach No. 2. The level of detail in the work plan will be sufficient enough so as to:

   A. Completely justify the feasibility of the neutralization system, including a thorough discussion of mechanical/chemical principles and practice of the cyanide detoxification technique proposed. If available, Barrick will furnish case studies of the proposed detoxification technique to demonstrate its viability and effectiveness in the removal and destruction of cyanide.

      Barrick's experience with Dump No. 1 has shown that after almost four years of the current neutralization method, the company has been unable to meet the neutralization criteria established in Table 1, below. In fact, very little progress has been made in reducing the average monthly free cyanide content of leachates from Dump No. 1 since January, 1990. Consequently, Barrick must explain what different steps or practices it will employ in the neutralization of Dump Leach No. 2 that will allow successful compliance with the neutralization criteria in Table 1.

   B. Completely describe the design, construction, operation and maintenance of the system. This will include identification and description of all materials, reagents, treatment works, and conveyances used in the application of rinsate; removal, fate and treatment of leachate; any byproducts generated thereby; and plans for the pump down and final removal and disposal of residual liquids in the dump leach after the neutralization criteria in Table 1 have been reached.

2. Additional Leachate Treatment - Barrick shall provide detailed engineering plans and specifications for the construction, operation and maintenance of all wastewater treatment works necessary to remove all sundry contaminants not removed by the cyanide detoxification system or process, as listed in Table 1, below. These contaminants include, but are not limited to: total dissolved solids, ammonia, nitrate, nitrite, arsenic or other heavy metals, and pH. Said treatment works shall provide polishing treatment to ensure that the leachate extracted from the dump leach meets the concentrations listed for all the neutralization parameters in Table 1.

3. Rinsate and Leachate Water Quality Sampling Program - Barrick shall include a detailed description of the rinsate and leachate monitoring program. This monitoring shall include all the field and laboratory chemical parameters required of ground water monitoring at Dump Leach No. 3, including but not limited to: all major ions, heavy metals, cyanide species, and cyanide degradation products, see Ground Water Discharge Permit No. UGW450001, Part I.E.7(b)(3). Individual leachate samples shall be collected simultaneously from both the pregnant solution return line and the leakage collection system. Sampling frequency for all rinsate and leachate parameters shall be at least monthly. Daily monitoring of free cyanide and pH, as conducted in the past, will also be required. Barrick shall ensure the quality of the monitoring data by collecting all samples in accordance with all applicable sections of the October 22, 1990 Subsurface Water Quality Sampling Quality Assurance (QA) and Quality Control (QC) Plan, approved for Dump Leach No. 3.

4. Rinsate Concentration Limits - the total cyanide concentration of rinsate applied to Dump Leach No. 2 shall at no time exceed the limit established in Table 1, below. Rinsate shall be sampled at an easily accessible point in the neutralization process circuit located at the dump leach immediately upstream of the distribution piping.

5. Leachate Concentration Limits - neutralization of Dump Leach No. 2 shall continue at least until leachate quality declines and is maintained at a concentration equal to or less than the limits listed in Table 1, below. Any approved neutralization plan will include:

   A. A rinsing schedule that includes several rest periods, during which Barrick will cease application of rinsate and later resume rinsing. During these periods of dry-down and wet-up of the dump leach, daily monitoring of at least free cyanide and pH will be completed in order to evaluate the potential of the leachate concentrations to rebound or increase. Any final approval by the Executive Secretary of completion of neutralization will include a demonstration that all the neutralization criteria in Table 1 have been met during both wet-up and dry down of the dump leach, and

   B. Statistical methods by which leachate water quality results will be analyzed to determine if they meet the concentration limits in Table 1, below, and are statistically valid.

6. Neutralization Flow Rates - Barrick shall disclose the maximum, minimum, and average daily flow rate applied to the dump leach during its active operational history. At no time will the daily minimum rinsate flow rate be applied to Dump No. 2 at a rate less than the historical average daily flow rate. In addition, Barrick shall monitor and report the maximum, minimum, and average daily flow rates at the dump leach.

Table 1: Barrick Dump Leach No. 2 Neutralization Limits

Leachate Parameter	Concentration Limit (mg/l)[1]
pH	6.5 to 8.5 units
Total Cyanide	0.2
Flouride	2.4
Nitrate + Nitrite (as N)	10.0
Arsenic	0.05
Barium	1.0
Cadmium	0.01
Chromium	0.05
Copper	1.0
Lead	0.05
Mercury	0.002
Selenium	0.01
Silver	0.05
Zinc	5.0

1) Concentrations derived from Utah Ground Water Quality Protection Standards, UAC R317-6-2, with the exception of Total Cyanide, which was derived from the EPA Drinking Water Health Advisory.

7. Quarterly Monitoring - Barrick shall submit quarterly reports to the Executive Secretary which will include the following information:

A. Monthly and daily rinsate and leachate quality monitoring required by Item No. 3, above, including both field and laboratory parameters.

B. Daily rinsate and leachate flow rates, reported on a monthly basis by daily maximum, minimum, and average flow rate.

Barrick shall report all quarterly neutralization monitoring to the Executive Secretary pursuant to the same schedule required for ground water monitoring (Consent Order, Condition No.1), as outlined below:

Quarter	Report Due on
1st (Jan., Feb., Mar.)	April 15
2nd (April, May, June)	July 15
3rd (July, Aug., Sept.)	October 15
4th (Oct., Nov., Dec.)	January 15

8. Compliance Schedule - pursuant to Condition No. 3 of the Consent Order, Barrick shall identify the following dates of compliance:

   A. Completion of Construction of Cyanide Neutralization System - Barrick shall complete all necessary construction of the cyanide Neutralization system on or before August 3, 1992.

   B. Completion of Construction of Additional Wastewater Treatment Works - Barrick shall complete all necessary construction of additional wastewater treatment works on or before August 3, 1992.

   C. Commencement of Neutralization - the date of application of rinsate to Dump Leach No. 2 shall begin on or before August 3, 1992.

   D. Completion of Neutralization - Barrick shall identify the date upon which neutralization of Dump Leach No. 2 shall be completed in full compliance with the approved Neutralization Plan, including compliance with the neutralization criteria outlined in Point 5, above.

Pursuant to Condition No. 3 of the Consent Order, Barrick shall correct all the deficiencies specified above, within 30 days of receipt of this letter, and resubmit the Neutralization Plan for final approval.

If you have any questions or comments, please contact Loren Morton at 538-6146. We appreciate your continued compliance.

Sincerely,

Utah Water Quality Board

Don A. Ostler, P.E.
Executive Secretary

DAO:lbm:lm

cc: Ken Alkema, DEQ
Fred Nelson, Asst. Attorney General
Ken Bousefield, DDW/S
Myron Bateman, Tooele County Health Dept.
Glade Shelly, Utah County Health Dept.
Wayne Hedberg, DOGM
David Bird, Parsons, Beble, & Latimer
J.B. Brown, Dames & Moore

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